

# Claims

- [c1] 1. Position detector for a moving part in a pipe with a permanent magnet connected to the moving part and a magnetic field sensor arranged on or near the pipe, characterized in that the magnetization of the permanent magnet runs in a direction that has a radial extension component with reference to the axis of the pipe.
- [c2] 2. Position detector according to claim 1, characterized in that the direction of magnetization runs in a radial direction with reference to the pipe axis.
- [c3] 3. Position detector according to claim 1, characterized in that the permanent magnet is annular and the ring axis and pipe axis coincide.
- [c4] 4. Position detector according to claim 1, characterized in that the permanent magnet is bar-shaped and at least one pole shoe running in a circumferential direction is provided on the pipe in the vicinity of the magnetic field sensor.
- [c5] 5. Position detector according to claim 4, characterized in that two pole shoes are provided, which extend in each case over somewhat less than  $180^{\circ}$  in a circumfer-

ential direction and are arranged such that the pole shoe ends are spaced in a circumferential direction, preferably equally spaced.

- [c6] 6. Position detector according to claim 5, characterized in that the magnetic field sensor is arranged near or in the pole gap lying between two pole shoe ends.
- [c7] 7. Position detector according to claim 6, characterized in that two magnetic field sensors are provided and one of the magnetic field sensors is arranged in each of the two pole shoe gaps and that the output signals of the two magnetic field sensors are combined by an adder.
- [c8] 8. Position detector according to Claim 1, characterized in that the moving part is rotationally symmetrical.
- [c9] 9. Position detector according to claim 8, characterized in that the moving part has two head sections cooperating closely with the internal wall of the pipe and a connecting section of reduced diameter lying in between and that the permanent magnet is arranged in the connecting section.